PRODUCT INFORMATION

SARS-CoV-2 Spike Glycoprotein S1 Subunit

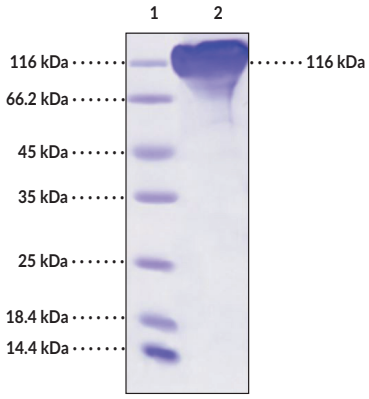
Item No. 31814

Overview and Properties

Synonyms:	COVID-19 Surface Glycoprotein S1 Subunit, 2019-nCoV Surface Glycoprotein S1 Subunit, Severe Acute Respiratory Syndrome Coronavirus 2 Spike Glycoprotein S1 Subunit
Source:	Active recombinant C-terminal mouse IgG1 Fc-tagged SARS-CoV-2 spike glycoprotein S1 subunit expressed in HEK293 cells
Amino Acids:	16-685
Uniprot No.:	P0DTC2
Molecular Weight:	101.4 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥90% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile PBS, pH 7.4
Endotoxin Testing:	<1.0 EU/g, determined by the LAL endotoxin assay
Protein Concentration:	***batch specific*** mg/ml
Bioactivity:	See figures for details

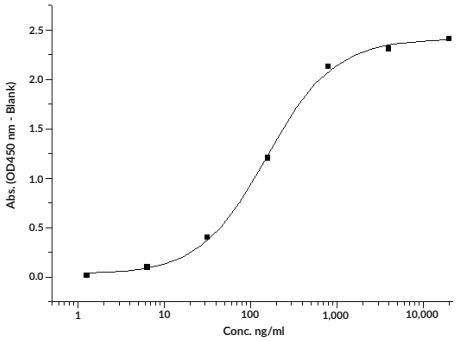
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: SARS-CoV-2 Spike Glycoprotein S1 Subunit

SDS-PAGE Analysis of SARS-CoV-2 Spike Glycoprotein S1 Subunit. This protein has a calculated molecular weight of 101.4 kDa. It has an apparent molecular weight of approximately 116 kDa by SDS-PAGE under reducing conditions due to glycosylation.



SARS-CoV-2 Spike Glycoprotein S1 Subunit Activity in a Functional ELISA. Immobilized human ACE2 protein (His-tag) at 2 µg/ml (100 µl/well) can bind SARS-CoV-2 Surface Glycoprotein S1 Subunit. The EC_{50} value for this is typically 90-240 ng/ml.

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Description

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) surface glycoprotein, also known as the spike glycoprotein, is encoded by the *S* gene in SARS-CoV-2 RNA.[1] SARS-CoV-2 is a member of the *Betacoronavirus* genus of viruses that has an approximately 79% sequence identity with SARS-CoV.[2,3] The spike protein of SARS-CoV-2 and the related viruses SARS-CoV and Middle East respiratory syndrome coronavirus (MERS-CoV) is a transmembrane glycoprotein that assembles into homotrimers on the virus surface and is comprised of an N-terminal S1 subunit, which contains the receptor binding domain (RBD), and a C-terminal S2 subunit, which facilitates fusion between viral and host cell membranes.[4-6] The 193-amino acid RBD of the SARS-CoV spike protein is a target for neutralizing antibodies.[5,7] The SARS-CoV-2 RBD, which spans amino acid residues 329 to 521, is 73% identical to that of SARS-CoV and can bind to human angiotensin-converting enzyme 2 (ACE2), which is the host cell surface receptor for both SARS-CoV and SARS-CoV-2.[4-7] SARS-CoV-2 is the causative agent of COVID-19, a primarily respiratory illness characterized by fever, cough, and shortness of breath that can lead to life-threatening complications.[6,8,9] Cayman's SARS-CoV-2 Surface Glycoprotein S1 Subunit can be used for ELISA. This protein is a disulfide-linked homodimer. The reduced monomer, comprised of the SARS-CoV-2 surface glycoprotein S1 subunit (amino acids 16-685) fused to mouse IgG1 Fc at its C-terminus, consists of 904 amino acids and has a calculated molecular weight of 101.4 kDa. As a result of glycosylation, the monomer migrates at approximately 116 kDa by SDS-PAGE under reducing conditions.

References

1. Kandeel, M., Ibrahim, A., Fayez, M., *et al.* From SARS and MERS CoVs to SARS-CoV-2: Moving toward more biased codon usage in viral structural and nonstructural genes. *J. Med. Virol.* **92(6)**, 660-666 (2020).
2. Lu, R., Zhao, X., Li, J., *et al.* Genomic characterisation and epidemiology of 2019 novel coronavirus: Implications for virus origins and receptor binding. *Lancet* **395(10224)**, 565-574 (2020).
3. Meo, S.A., Alhowikan, A.M., Al-Khlaiwi, T., *et al.* Novel coronavirus 2019-nCoV: Prevalence, biological and clinical characteristics comparison with SARS-CoV and MERS-CoV. *Eur. Rev. Med. Pharmacol. Sci.* **24(4)**, 2012-2019 (2020).
4. Liu, Z., Xiao, X., Wei, X., *et al.* Composition and divergence of coronavirus spike proteins and host ACE2 receptors predict potential intermediate hosts of SARS-CoV-2. *J. Med. Virol.* **92(6)**, 595-601 (2020).
5. He, Y., Zhou, Y., Liu, S., *et al.* Receptor-binding domain of SARS-CoV spike protein induces highly potent neutralizing antibodies: Implication for developing subunit vaccine. *Biochem. Biophys. Res. Commun.* **324(2)**, 773-781 (2004).
6. Walls, A.C., Park, Y.-J., Tortorici, M.A., *et al.* Structure, function, and antigenicity of the SARS-CoV-2 spike glycoprotein. *Cell* **181(2)**, 281-292 (2020).
7. Tian, X., Li, C., Huang, A., *et al.* Potent binding of 2019 novel coronavirus spike protein by a SARS coronavirus-specific human monoclonal antibody. *Emerg. Microbes Infect.* **9(1)**, 382-385 (2020).
8. Klok, F.A., Kruip, M.J.H.A., van der Meer, N.J.M., *et al.* Incidence of thrombotic complications in critically ill ICU patients with COVID-19. *Thromb. Res.* **191**, 145-147 (2020).
9. Yang, F., Shi, S., Zhu, J., *et al.* Analysis of 92 deceased patients with COVID-19. *J. Med. Virol.* (2020).

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